

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**GRASSED WATERWAY**

(Acre)  
CODE 412

**DEFINITION**

A natural or constructed channel that is shaped or graded to required dimensions and established in suitable vegetation for the stable conveyance of runoff.

**PURPOSE**

To convey runoff from terraces, diversions, or other water concentrations without causing erosion or flooding and to improve water quality.

**CONDITIONS WHERE PRACTICE APPLIES**

All sites where added capacity, vegetative protection, or both are required to control erosion resulting from concentrated runoff and where such control can be achieved by using this practice alone or combined with other conservation practices. This practice is not applicable where its construction would destroy important woody wildlife cover and the present watercourse is not seriously eroding.

**CRITERIA**

**Capacity.** The minimum capacity shall be that required to convey the peak runoff expected from a storm of 10-year frequency, 24-hour duration. When slope is less than 1 percent, out-of-bank flow may be permitted if such flow will not cause excessive erosion. The minimum in such cases shall be the capacity required to remove the water before crops are damaged.

**Velocity.** Design velocities shall not exceed those obtained by using the procedures, "n" values, and recommendations in the Engineering Field Manual or SCS-TP-61, Handbook of Channel Design for Soil and Water Conservation.

**Width.** The bottom width of trapezoidal

waterways shall not exceed 100 ft unless multiple or divided waterways or other means are provided to control meandering of low flows.

**Side slopes.** Side slopes shall not be steeper than a ratio of two horizontal to one vertical. They should be designed to accommodate the land user's equipment.

**Depth.** The minimum depth of a waterway that receives water from terraces, diversions, or other tributary channels shall be that required to keep the design water surface elevation at, or below, the design water surface elevation in the terrace, diversion, or other tributary channel at their junction when both are flowing at design depth.

**Drainage.** Subsurface drains (606), underground outlets (620), stone center waterways, or other suitable measures shall be provided for in the design for sites having prolonged flows, a high water table, or seepage problems. Water-tolerant vegetation such as reed canarygrass may be an alternative on some wet sites.

**Outlets.** All grassed waterways shall have a stable outlet with adequate capacity to prevent ponding or flooding damages. The outlet can be another vegetated channel, an earth ditch, a grade stabilization structure, or other suitable outlets.

**Establishment of vegetation.** Grassed waterways will be vegetated according to practice standard Critical Area Planting (342).

~~Maintenance. A maintenance program shall be established to maintain waterway capacity, vegetative cover, and the outlet. Vegetation damaged by livestock, machinery, herbicides, or erosion must be repaired promptly.~~

**CONSIDERATIONS**

The most critical time in successfully installing grassed waterways is

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when vegetation is being established. Special protection such as mulch anchoring, straw or hay bale dikes, or other diversion methods are warranted at this critical period. Supplemental irrigation may also be warranted. The vegetation should be well established before large flows are permitted in the channel.

#### **Water Quantity**

1. Effects on the components of the water budget, especially on volumes and rates of runoff.

#### **Water Quality**

1. Effects on erosion and the movement of sediment, pathogens, and soluble and sediment-attached substance carried by runoff.
2. Filtering effects of vegetation on movement of sediment and dissolved and sediment-attached substances.
3. Short-term and construction-related effects on downstream water resources.

## **PLANS AND SPECIFICATIONS**

Plans and specifications for grassed waterways shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

## **OPERATIONS AND MAINTENANCE**

***Maintenance. A maintenance program shall be established to maintain waterway capacity, vegetative cover, and the outlet. Vegetation damaged by livestock, machinery, herbicides, or erosion must be repaired promptly.***

Provisions shall be made to maintain the vegetation in the waterway and to remove any debris that may affect the channel capacity.